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languages of British Columbia. All this, it seems to me, argues in favor of the indigenous, American origin of the Eskimo.

A. F. CHAMBERLAIN.

University College, Toronto, Nov. 12.

IT seems to me that the similarities of sound mentioned in Mr. Chamberlain's letter cannot be admitted as evidence of a connection between the Eskimo and other American languages. The Eskimo words which he classes together are derivatives of entirely different stems, that cannot be traced to a common root. In the first table we recognize the following stems: *nīpla-* ('clear weather'), *nīpīg-* ('to stick'), *nīpag-* ('to vanish'). Under the heading *man* the words *inuk* and *angut* are classed together, although they have no connection whatever. In comparing languages, complicated derivatives must not be used, but the words must first be traced to their stems, and the meaning of the stems must be ascertained as well as the phonetic laws obtaining in the dialects of the stock, before it is possible to make a satisfactory comparison. Fortuitous coincidences of sound like those given by Chamberlain cannot be admitted as evidence of relationship.

F. BOAS.

New York, Nov. 25.

Rate of Change in American Languages.

THE letter of Dr. Beauchamp (*Science*, Nov. 18) opens an interesting linguistic question. My own impression is that the rapidity of changes in unwritten, at least American, languages has been overestimated.

Sagard, in the preface to his 'Dictionnaire de la Langue Huronne' (Paris, 1632), asserted that the Huron was constantly changing, so that in a generation or two it would seem like a new language. Two hundred years afterwards, Duponceau took Sagard's very imperfect book, tried it on some intelligent Hurons, and found that "the language had not undergone any essential change" (*Mémoire sur les Langues de l'Amérique du Nord*, pp. 444, 445).

In 1578 Jean de Lery printed his 'Histoire d'un Voyage fait en la terre du Bresil,' containing long conversations in Tupi. Three hundred years later, Dr. Nogueira republished these conversations, with their equivalents in modern Tupi. The differences are surprisingly small,—with proper allowances for dialect and varying phonetics, scarcely more than between Lery's French and the French of to-day (see NOGUEIRA, *Apontamentos sobre o Abaíenga ou Língua Geral dos Brasis, Rio de Janeiro*, 1876).

I have recently completed a comparison between the Alagüilac of Guatemala, which is the most southern dialect known of the Nahuatl, by means of a vocabulary obtained in 1878, with that tongue as spoken in the valley of Mexico in 1550, preserved in the 'Vocabulario' of Molina. The separation of the two peoples could not have been less than four hundred years; but the divergencies are so slight that I could easily have believed the Alagüilac words to have been obtained by a German (my informant was of that nationality) in ancient Tezcuco.

Dr. Beauchamp, in referring to conflicting orthographies of the same word, points out a real but not the only cause of apparent without actual change in these tongues. He also touches on the confusion liable to occur from the natives forming diverse figurative compounds to express objects and ideas new to them. I was struck with this lately in comparing the expressions in the Lenâpé for 'faith,' 'regeneration,' 'repentance,' and such theological terms, as introduced, on the one hand, by the Moravian missionaries, and, on the other, independently, by the Anglican Church. They are usually totally dissimilar.

But a much more curious and important law underlies the apparent variability of many American tongues. I refer to that of 'alternating consonants' and 'permutable vowels.' In a number of these languages it is entirely optional with the speaker to articulate any one of three or four consonantal sounds for the same phonetic element. For example: he may at will pronounce the syllable *ton* either thus, or *lon*, *nol*, *rot*, etc., alternating the elements *l*, *n*, *r*, *t*, at will. I have little doubt but that something of the same kind obtained in ancient Accadian, which will explain why the same cuneiform character stands indiscriminately for the sounds *ku*, *tus*, *pun*, and *dur*; and the recent researches of Dr. Carl Abel on the phonetic modifications of the ancient Coptic radicals hint strongly at the prevalence of this peculiarity in that venerable speech.

In America, I name as special examples of this the Klamath and the Chapanec. But that these phonetic variations are within fixed limits, and do not involve the integrity of the language, is curiously proved by the last mentioned. Remesal, the early ecclesiastical historian of Chiapas, states that the Chapanec was introduced into that department from Nicaragua many generations before the Conquest; probably it was not later than the year 1300. Now, in 1872, my late friend, Dr. C. H. Berendt, collected in Nicaragua, from a few old Indians, the only survivors of their tribe who spoke its tongue, a number of words and phrases of a dialect called the 'Mangue.' A comparison proves it to have been beyond question a very close relative of the Chapanec, essentially the same in fact, though separated from it for more than five hundred years (see an article on the Mangue by me in the *Proceedings of the American Philosophical Society*, 1885).

As in the Turanian tongues, the Turkish, for example, there is a 'vocalic echo,' the leading vowel of the word forcing the others to assimilate to it in sound, so in some American tongues there is a 'consonantal echo,' the presence of one consonantal sound requiring more or less changes in the others. The Tupi, the Chapanec, and the Klamath offer examples of the 'consonantal echo,' while a certain degree of the 'vocalic echo' is observable in the Kiche and Cakchiquel.

These phonetic laws must be thoroughly understood and allowed for, before any one pronounces positively on the rate of change in American languages.

DR. D. G. BRINTON.

Media, Penn., Nov. 23.

Amnesia.

THE cases cited in *Science* (Nov. 11, 18, pp. 232, 250) remind me of the following. Some twenty-seven years ago, a neighbor of mine (a young man of twenty-five or under), springing from the vaulting-horse in a gymnasium to catch the trapeze, fell, striking apparently upon his shoulders, and was taken up insensible. Consciousness soon returned, perhaps in a fraction of an hour, but there was no recollection of the few hours just previous to the fall. As recovery progressed, however, it was said that his recollections came down closer and closer to the time of the accident; and that in a week or less he could even remember taking the leap, though not his striking the mattress.

Whether it be common that the progress of recovery should thus lessen the period covered by the amnesia, might no doubt be learned from such data as many professional athletes could furnish. An athlete once told me how, some years before, he had fallen on his forehead in the circus, and had been taken up for dead. His recovery, I think, had taken several months. He could remember, not indeed the blow, but the sense of powerlessness with which, in mid-air, he had realized that "his balance was lost." But perhaps he did not say whether, a few hours or weeks after the accident, his recollections had come down so far.

J. E. OLIVER.

Cornell University, Nov. 18.

THE cases of amnesia mentioned in *Science* of Nov. 18 recall in my own experience cases which may be of sufficient interest to be recorded.

When about fifteen years old, I went into a stable to stanchion cows for milking. About an hour afterwards I was found wandering about the yard unconscious, and bleeding profusely from wounds in the face. I have not been able to this day to tell how I was hurt. I have no recollection, beyond going into the stable and fastening a few cows. My hat was found under the cattle's feet. My front teeth were loosened, a hole cut through my lip, and my shoulder in front badly bruised. I was feeling well at the time, and have never fainted, and cannot refer the injury to that cause. The nature of the injury would indicate that it came from the front, and must have appealed to my senses in their normal state.

From other experiences I have always believed that it is more common to remember the cause of an injury producing temporary unconsciousness than to forget it. I became unconscious once from drowning, but remembered vividly every thing when restored. I was once prostrated by lightning, but remember having seen the flash.

I think one's remembering the cause of an injury depends largely